

IN THE CLAIMS:

Please amend claim 1 and cancel claim 10 as follows:

1. (Currently Amended) A polymer electrolyte fuel cell including a high-temperature portion and a low-temperature portion in a cell plane, said fuel cell comprising:

an oxidant gas passage formed in said fuel cell, said oxidant gas passage including an upstream portion and a downstream portion, said upstream portion of said oxidant gas passage being provided with a hydrophilicity-treated portion, and said downstream portion of said oxidant gas passage being provided with a hydrophobicity-treated portion;

wherein an oxidant gas flow is directed within said oxidant gas passage from said high-temperature portion to said low-temperature portion of the fuel cell so that water produced during operation of the fuel cell recirculates in said oxidant gas passage.

2. (Original) A fuel cell according to claim 1, wherein said low-temperature portion is located at a higher position than said high-temperature portion.

3. (Original) A fuel cell according to claim 1, wherein said oxidant gas flow direction is reverse to a direction of gravity.

4. (Cancelled)

5. (Cancelled)

6. (Currently Amended) A fuel cell according to claim 1 ~~4 or claim 5~~, wherein said hydrophobicity-treated portion provided to said downstream portion of said oxidant gas passage includes a fluororesin coating formed at a surface of said downstream portion of said oxidant gas passage.

7. (Currently Amended) A fuel cell according to claim 1 [4], wherein said hydrophilicity-treated portion provided to said upstream portion of said oxidant gas passage

OK
To
ENTER

GC
1/20/04

includes a silicon dioxide layer formed at a surface of said upstream portion of said oxidant gas passage.

8. (Original) A fuel cell according to claim 1, further comprising:
a fuel gas passage formed in said fuel cell,
wherein a fuel gas flow is directed from said high-temperature portion to said low-temperature portion.
9. (Original) A fuel cell according to claim 1, further comprising:
a fuel gas passage formed in said fuel cell, said fuel gas passage including a fuel gas inlet to the cell and a fuel gas outlet from the cell,
wherein a fuel gas flow is directed from said low-temperature portion to said high-temperature portion, and said fuel gas outlet is positioned lower than said fuel gas inlet.
10. (Cancelled)
11. (New) A polymer electrolyte fuel cell including a high-temperature portion and a low-temperature portion in a cell plane, said fuel cell comprising:
an oxidant gas passage formed in said fuel cell, wherein said oxidant gas passage includes an upstream portion and a downstream portion, said downstream portion of said oxidant gas passage being provided with a hydrophobicity-treated portion, and further comprising a water drop atomizing device disposed at a location upstream of an inlet of said oxidant gas passage;
wherein an oxidant gas flow is directed within said oxidant gas passage from said high-temperature portion to said low-temperature portion of the fuel cell so that water produced during operation of the fuel cell recirculates in said oxidant gas passage.

PATENT

Ser. No. 09/912,460

Atty. Docket No.: 77661/55

Tatsuya Kawahara et al.

12. (New) A fuel cell according to claim 11, wherein said hydrophobicity-treated portion provided to said downstream portion of said oxidant gas passage includes a fluororesin coating formed at a surface of said downstream portion of said oxidant gas passage.